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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,037	01/28/2004	Koichiro Nakazawa	03500.017851	9610

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EXAMINER

MARTIN, LAURA E

ART UNIT PAPER NUMBER

2853

DATE MAILED: 01/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/765,037	<b>Applicant(s)</b> NAKAZAWA ET AL.	
	<b>Examiner</b> Laura E. Martin	<b>Art Unit</b> 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/4/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takemoto et al. (US 6084619) in view of Kaneko et al. (US 2002/0041310) and Koitabashi et al. (US 6494569).

Takemoto et al. teaches an ink-jet recording process for conducting recording by ejecting a pigment ink and a reaction liquid containing a polyvalent metal salt (column 2, lines 22-30) from a recording section, in which a plurality of nozzles for ejecting the pigment ink and reaction liquid are arranged, to a recording medium while relatively scanning the recording section to the recording medium (column 11, lines 28-35), the process comprising the steps of: ejecting the pigment ink having a surface tension lower than that of the reaction liquid to the reaction liquid ejected from the surface of the recording medium (column 2, lines 22-30). Takemoto et al. does not teach forming a filmy aggregate by gathering of agglomerates at an interface where the reaction liquid has come into contact with the pigment ink. Takemoto et al. also does not teach the conditions for ejecting the reaction liquid in the ejection step or the conditions for

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ejecting the reaction liquid to a prescribed area on the recording medium when at least the print duty of the ink in the prescribed area is 100% satisfy the relationship of

$$55 \times \frac{0.85 \times 10^6 \times Vd(pl)^{-0.61}}{Rx(dpi)Ry(dpi)} \leq \text{duty}(\%) \leq 125 \times \frac{0.85 \times 10^6 \times Vd(pl)^{-0.61}}{Rx(dpi)Ry(dpi)}$$

wherein Vd (pl) is an ejection volume per dot of the reaction liquid, Rx (dpi) is a print resolution in the direction of the relative scanning Ry (dpi) is a print resolution in the arrangement direction of the nozzles, and duty (%) is a print duty of the reaction liquid.

Kaneko et al. teaches the conditions for ejecting the reaction liquid in the ejection step or the conditions for ejecting the reaction liquid to a prescribed area on the recording medium when at least the print duty of the ink in the prescribed area is 100% satisfy the relationship of

$$55 \times \frac{0.85 \times 10^6 \times Vd(pl)^{-0.61}}{Rx(dpi)Ry(dpi)} \leq \text{duty}(\%) \leq 125 \times \frac{0.85 \times 10^6 \times Vd(pl)^{-0.61}}{Rx(dpi)Ry(dpi)}$$

wherein Vd (pl) is an ejection volume per dot of the reaction liquid, Rx (dpi) is a print resolution in the direction of the relative scanning Ry (dpi) is a print resolution in the arrangement direction of the nozzles [0151-0153], and duty (%) is a print duty of the reaction liquid [0171].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Takemoto et al. with that of Kaneko et al. in order to provide for a clear picture.

Koitabashi et al. teaches forming a filmy aggregate by gathering of agglomerates at an interface where the reaction liquid has come into contact with the pigment ink (column 1, lines 35-39 and column 3, lines 3-5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Takemoto et al. with the disclosure of Koitabashi et al. in order to improve image quality.

Claims 3-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koitabashi et al. (US 6494569) in view of Kaneko et al. (US 2002/0041310).

Koitabashi et al. teaches an ink-jet recording process for conducting recording by ejecting a pigment ink and a reaction liquid containing a polyvalent metal salt from a recording section (column 6, lines 62-65), in which a plurality of nozzles for ejecting the pigment ink and reaction liquid are arranged, to a recording medium while relatively scanning the recording section to the recording medium (column 16, lines 28-35), the process comprising the steps of: ejecting a reaction liquid to the recording medium (column 6, lines 65-67) and ejecting the pigment ink to the recording medium in such a manner that the pigment ink is brought into contact with the recording liquid present in a liquid state on the surface of the recording medium (column 7, lines 1-5); bringing the pigment ink into contact with an interface of the reaction liquid present on the surface of the recording medium (column 7, lines 1-5) and forming a filmy aggregate by gather of agglomerates at the interface where the reaction liquid has come into contact with the pigment ink (column 1, lines 35-39 and column 3, lines 3-5); and accelerating the

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penetration of the reaction liquid with respect to the recording medium (column 6, lines 3-12).

Koitabashi et al. does not teach the conditions for ejecting the reaction liquid in the ejection step or the conditions for ejecting the reaction liquid to a prescribed area on the recording medium when at least the print duty of the ink in the prescribed area is 100% satisfy the relationship of

$$55 \times \frac{0.85 \times 10^6 \times Vd(pl)^{-0.61}}{Rx(dpi)Ry(dpi)} \leq \text{duty}(\%) \leq 125 \times \frac{0.85 \times 10^6 \times Vd(pl)^{-0.61}}{Rx(dpi)Ry(dpi)}$$

wherein Vd (pl) is an ejection volume per dot of the reaction liquid, Rx (dpi) is a print resolution in the direction of the relative scanning Ry (dpi) is a print resolution in the arrangement direction of the nozzles, and duty (%) is a print duty of the reaction liquid.

Kaneko et al. teaches the conditions for ejecting the reaction liquid in the ejection step or the conditions for ejecting the reaction liquid to a prescribed area on the recording medium when at least the print duty of the ink in the prescribed area is 100% satisfy the relationship of

$$55 \times \frac{0.85 \times 10^6 \times Vd(pl)^{-0.61}}{Rx(dpi)Ry(dpi)} \leq \text{duty}(\%) \leq 125 \times \frac{0.85 \times 10^6 \times Vd(pl)^{-0.61}}{Rx(dpi)Ry(dpi)}$$

wherein Vd (pl) is an ejection volume per dot of the reaction liquid, Rx (dpi) is a print resolution in the direction of the relative scanning Ry (dpi) is a print resolution in the arrangement direction of the nozzles [0151-0153], and duty (%) is a print duty of the reaction liquid [0171].


It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Koitabashi et al. with the disclosure of Kaneko et al. in order to improve print quality.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Martin whose telephone number is (571) 272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Laura E. Martin

 1/6/06  
**MANISH S. SHAH**  
**PRIMARY EXAMINER**